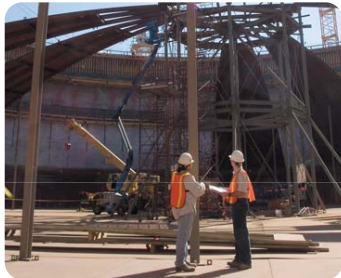


BUILDING A WORLD OF DIFFERENCE®



Renewable Energy Transmission Initiative

Phase 1B Draft Report

Economic Assessment of Renewable Energy Zones

Black & Veatch

Plenary Stakeholder Group

November 12, 2008

Agenda

- Overview of Draft Report
 - CREZ & Resource Area Ranking Costs
 - Resource Supply Curves
 - Sub-CREZ Designations
 - Uncertainty / Sensitivity Analyses

CREZ & Resource Area Ranking Costs

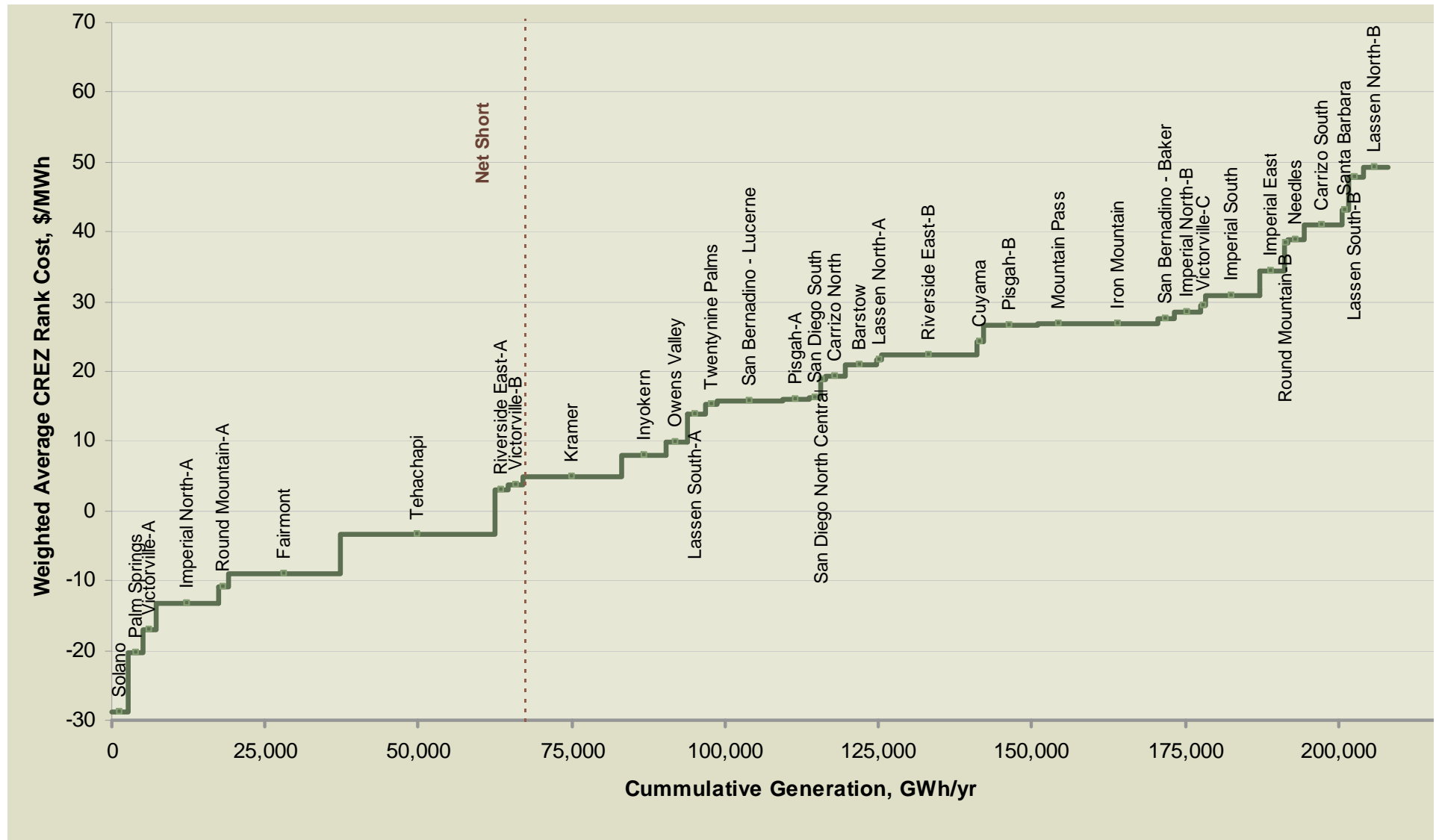
- CREZs are identified in California while Resource Areas are used for non-California areas
 - CREZs have designed transmission solution
 - Resource areas include list of projects with no defined transmission solution
- 29 CREZs in California with 8 sub-CREZs
- 3 Out-of-state Resource Areas

CREZ Ranking Costs

- Ranking costs for CREZs are the weighted average total cost of all resources *less* resource value

Weighted Average CREZ Rank Costs.				
CREZ Name	Net Capacity (MW)	Annual Energy (GWh/yr)	Cumulative Energy (GWh/yr)*	Weighted Average Rank Cost (\$/MWh)
Solano	894	2,721	2,721	-29
Palm Springs	770	2,465	5,186	-20
Victorville-A	800	2,112	7,298	-17
Imperial North-A	1,370	10,095	17,393	-13
Round Mountain-A	240	1,598	18,990	-11
Fairmont	6,918	18,318	37,308	-9
Tehachapi	9,642	25,091	62,400	-3
Riverside East-A	1,000	2,339	64,739	3
Victorville-B	895	2,267	67,006	4
Kramer	6,627	16,251	83,257	5
Inyokern	2,887	7,136	90,393	8
Owens Valley	1,400	3,433	93,826	10
Lassen South-A	1,000	3,010	96,836	14

CREZ Ranking Costs Supply Curve



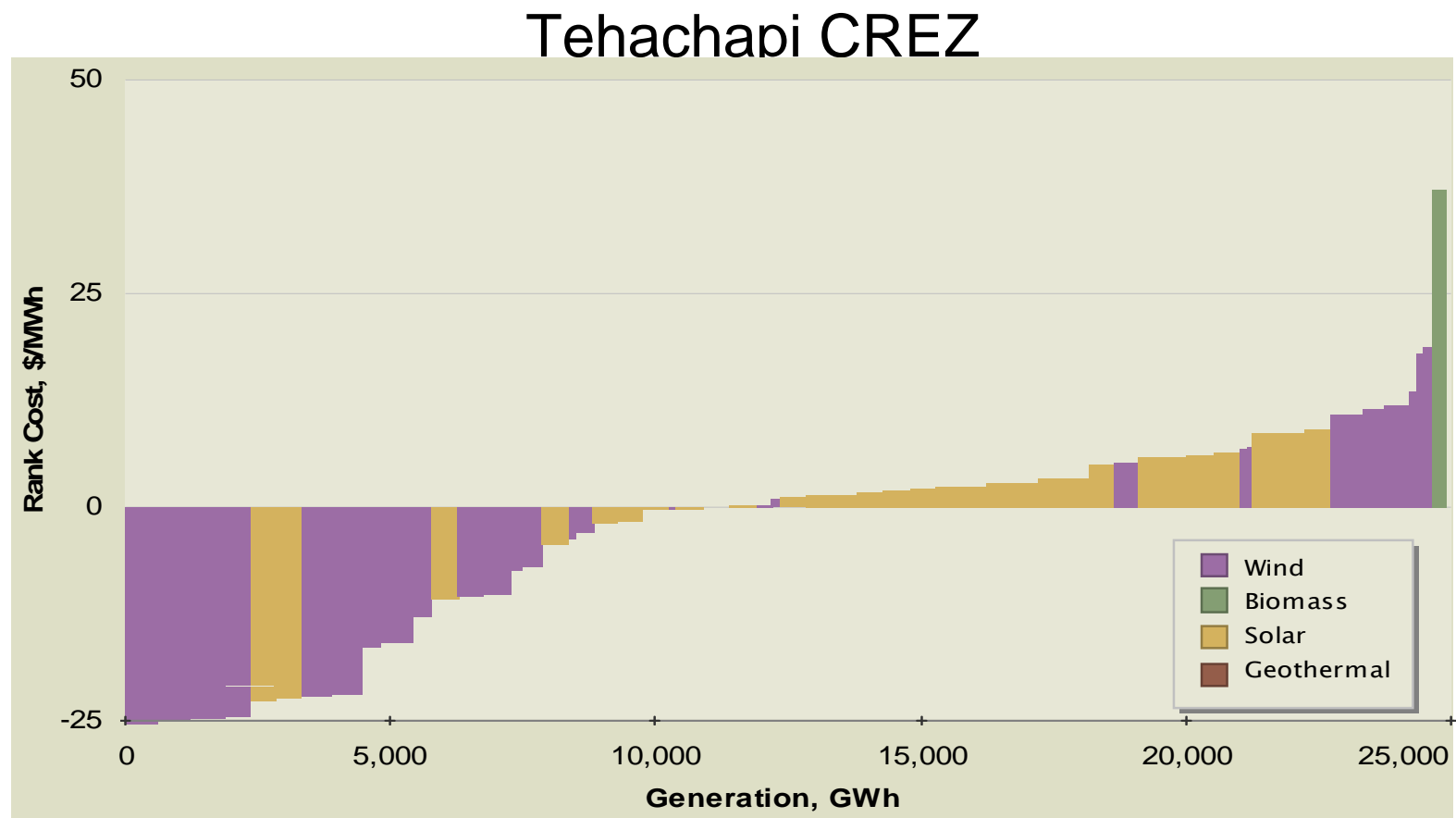
Resource Area Ranking Costs

- Ranking costs for Out-of-state Resources

	MW	GWh/yr*	Avg. Energy Cost (\$/MWh)	Avg. T-Cost (\$/MWh)	Avg. Energy Value (\$/MWh)	Avg. Capacity Value (\$/kW-yr)	Avg. Rank Cost (\$/MWh)
North Out-of-State Resource Areas Rank Costs							
British Columbia	8,394	25,948	115	59	85	204	59
Oregon	5,662	16,244	129	44	83	92	75
Washington	4,211	10,570	136	84	83	92	112
Nevada Out-of-State Resource Areas Rank Costs							
Central Nevada	636	4,341	93	19	85	204	-1
Northern Nevada	855	4,277	119	26	85	204	32
Southern Nevada	8,904	19,916	161	33	96	135	42
Southwest Out-of-State Resource Areas Rank Costs							
Arizona	7,129	16,836	159	36	98	167	30
Baja California Norte	5,000	13,726	94	24	85	68	9
Other Resources	40	95	201	4	95	154	46

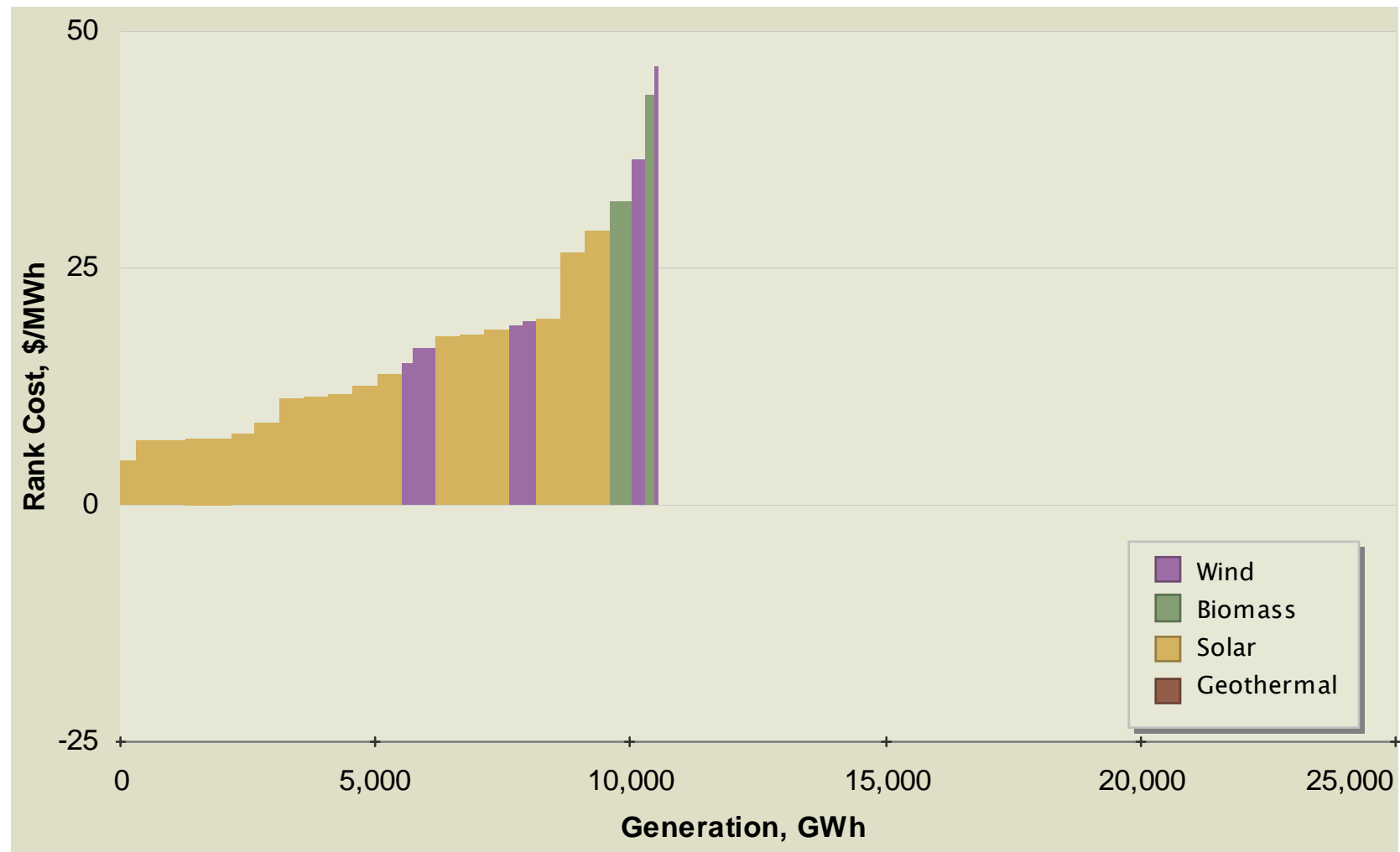
Resource Supply Curves

- Supply curves depict all resources in a CREZ based on quantity (GWh) and rank cost (\$/MWh)



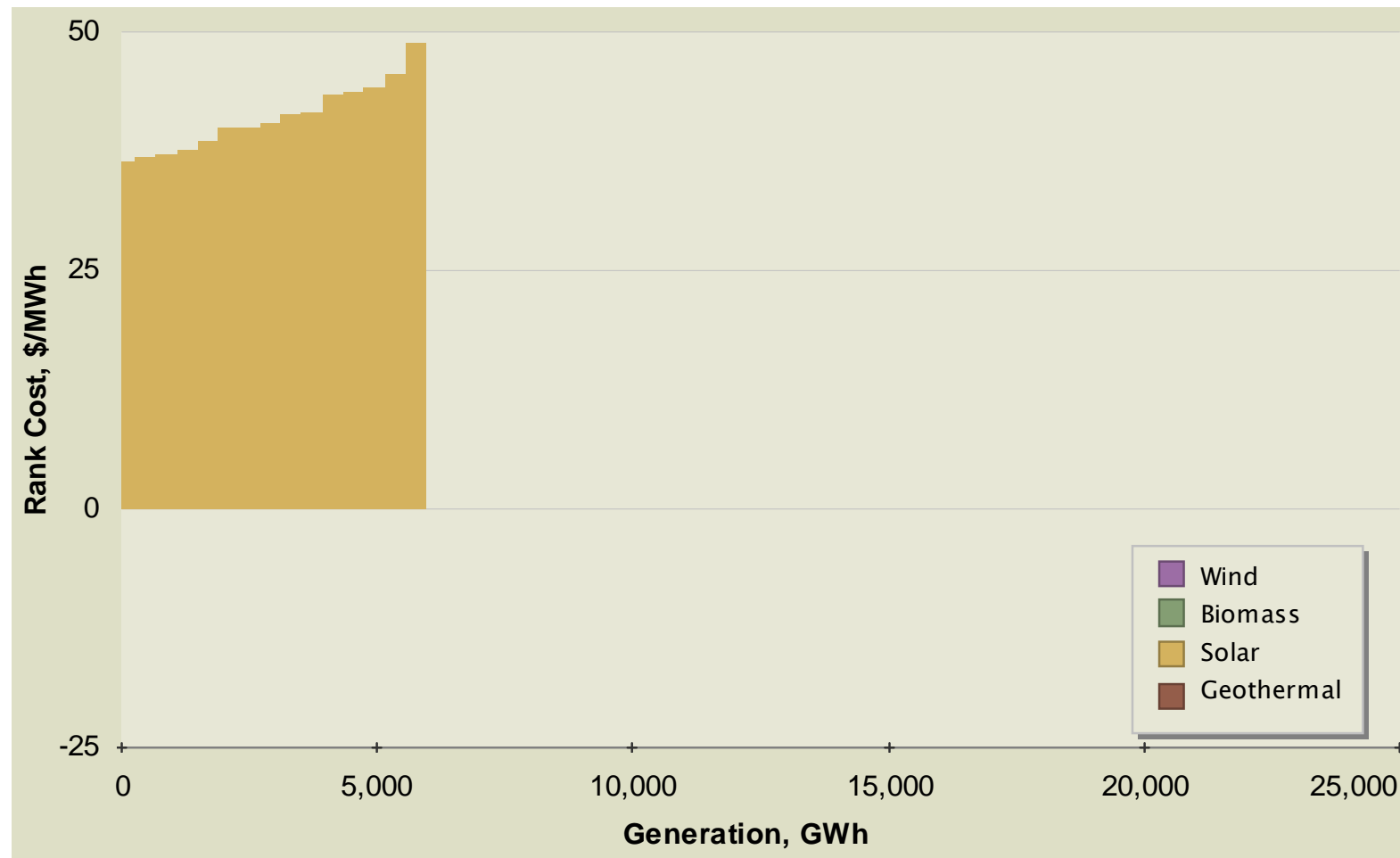
Resource Supply Curves

San Bernardino – Lucerne CREZ



Uncertainty / Sensitivity Analyses

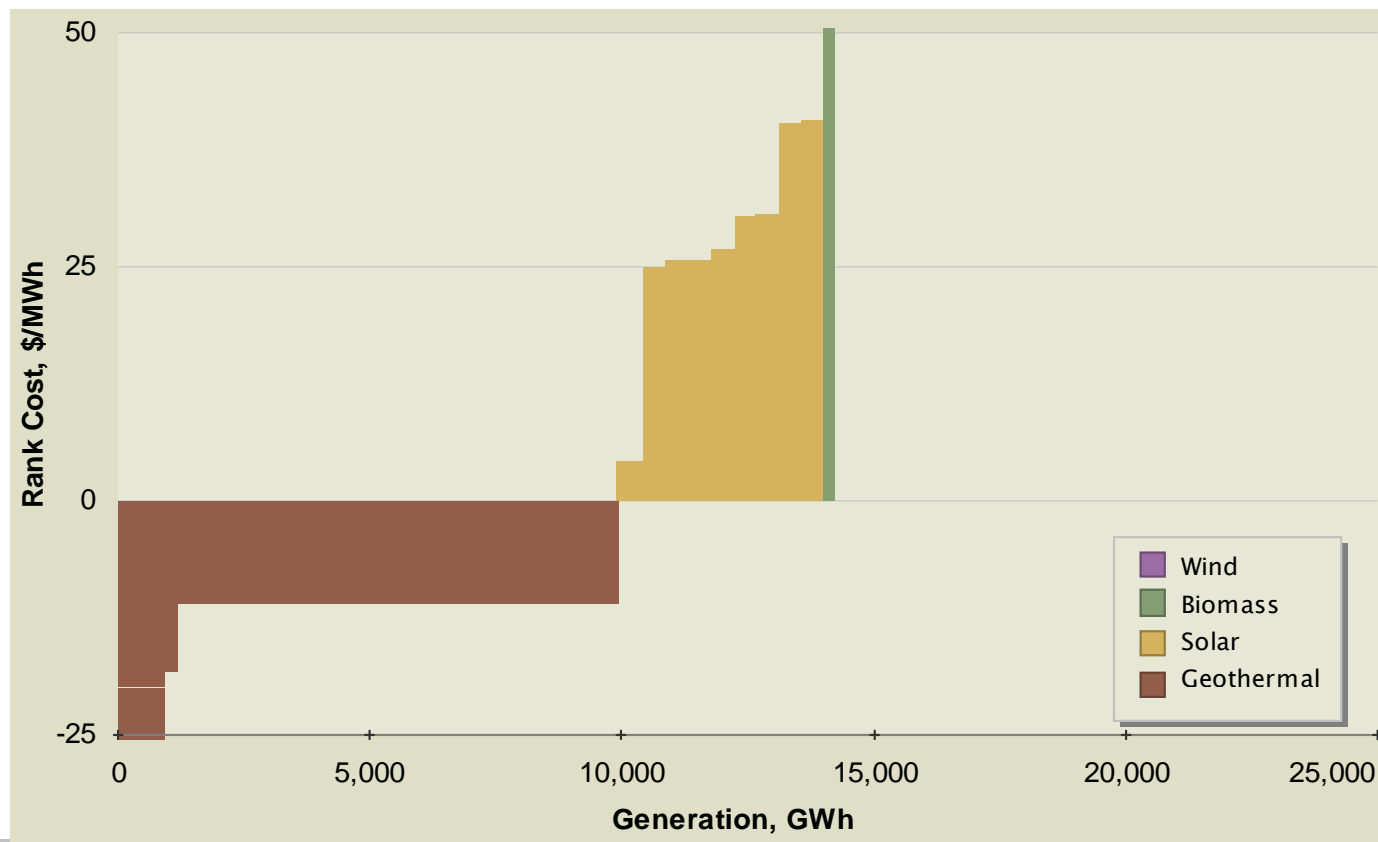
Carrizo South CREZ



Sub-CREZ Designations

- Sub-CREZs were developed for CREZs with cost-competitive projects in an otherwise poorly ranked CREZ

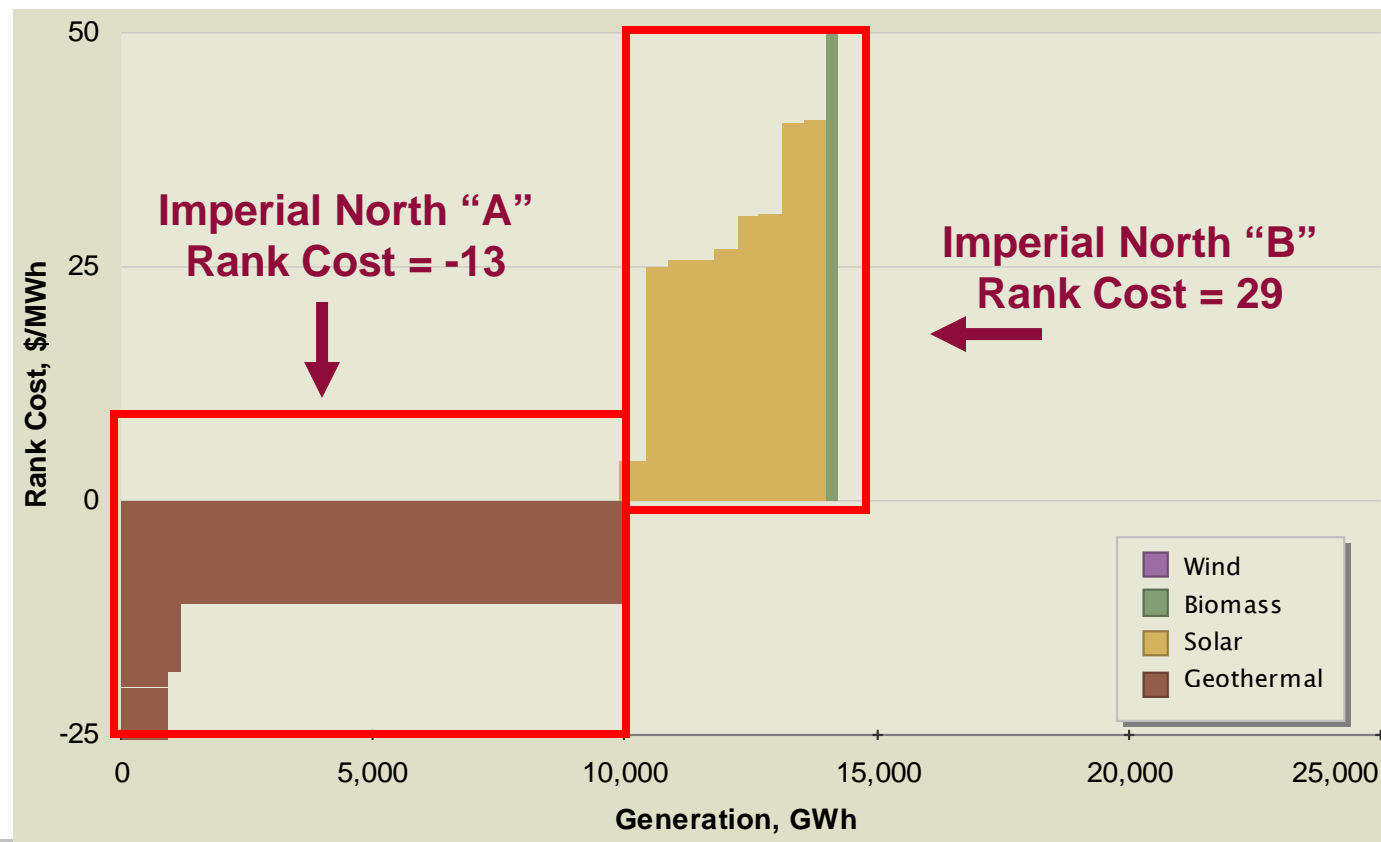
Imperial North CREZ



Sub-CREZ Designations

- Sub-CREZs were developed for CREZs with cost-competitive projects in an otherwise poorly ranked CREZ

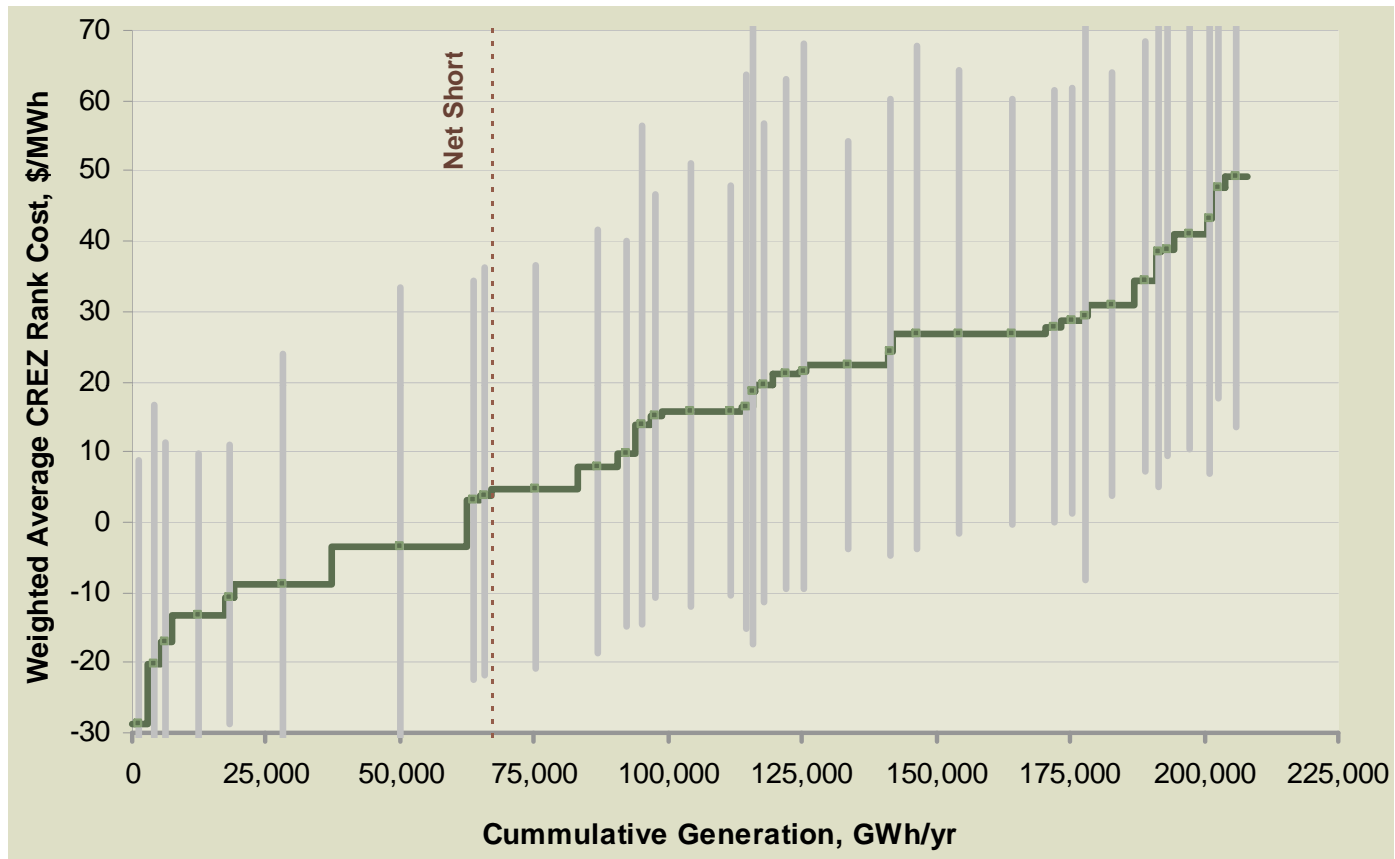
Imperial North Example



Uncertainty / Sensitivity Analyses

- Uncertainty bounds for general economic variables
 - Capital cost, capacity factor, and fuel cost
- Sensitivity analysis for specific scenario analysis
 - Tax credits, energy value, capacity value, lower PV costs, and additional geothermal potential
- Other variables found to have little impact on CREZ rankings

Uncertainty Results



- Due to overlap, the initial analysis is not useful for identifying new CREZ ranking
- Separate runs at the low and high end of uncertainty points show no change in CREZ priorities

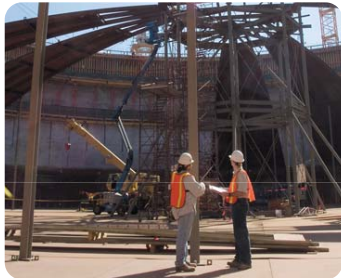
Sensitivity Analysis Results Summary

- Certain CREZs considered to contain poor resources in the base case may become attractive depending on the assumptions made.
- Greater out-of-state resources could be cost competitive under modified tax policies and those supporting wind and geothermal.
- Large amounts of non-CREZ solar PV resources could be economic if manufacturer cost targets are met
- The following CREZs could be cost-competitive under certain scenarios (generally small; ~15,000 GWh/yr)
 - Carrizo North
 - Lassen North-A
 - Lassen South-A
 - Pisgah-A
 - Round Mountain-B
 - San Diego North Central
 - San Diego South
 - Santa Barbara
 - Twentynine Palms
 - Victorville-C

BUILDING A WORLD OF DIFFERENCE®



BLACK & VEATCH



Thank You!

Ryan Pletka

PletkaRJ@bv.com

Tel: 925-949-5929

Tim Mason

MasonT@bv.com

Tel: 925-949-5943